BY GENEVIEVE B. WIMSATT

Business Investment in Durable Goods

Developments in the Machinery Industry

DURING 1959 business expenditures for producers' durable equipment moved higher, though by the end of the year they had not as yet regained the earlier cyclical peak reached in the third quarter of 1957. The decline from that high extended over a four-quarter period, and was the most pronounced of the postwar period. Since the summer of 1958, spending in this area has risen one-fourth, and is currently an expansionary force in the recovery of total output and employment.

This resurgence in producers' durable equipment demand has been uneven in its impact upon the various industries contributing to the new stock of private capital equipment. All the supplying industries have recovered from their most recent cyclical lows, though at varying rates, and their relation now to previous cyclical highs shows considerable dispersion.

This article analyzes the recent behavior of the several machinery industries to illustrate the manner in which business fixed investment decisions directly affect output. It should be noted, however, that while investment in machinery and equipment provides a very large market on its own—current expenditures at an annual rate of $28 billion account for some 6 percent of the U.S. output of all goods and services—its total effect on the economy is considerably greater due to the role of investment as a prime determinant of the volume of business activity and to the volatility of producers' capital outlays.

Two major qualifications may be noted. First, this article omits from detailed consideration business purchases of transportation equipment, though these capital goods account for one-fourth of total producers' durable equipment. The jet programs of airlines, the freight car programs of the railroads, and business purchases of motor vehicles have been of particular importance in the fluctuations that have occurred recently. The investment programs of the airlines—both foreign and domestic—are unusually large for the coming year.

Second, activity in the machinery industry is not concerned exclusively with producers' durable equipment, although such demand provides its principal market. The industry also sells to the consumer (notably radios, phonographs, television, and household appliances), to Government (electronics and communications equipment sales account for a significant part of defense outlays), and to foreign markets.

Demand from these major sources has often diverged from business demand, and this has tended to dampen fluctuations caused by swings in business investment and has affected the industry's growth in recent years. Currently, for example, machinery sales have posted new highs, despite the less-marked recovery in investment.

Shifts in investment

Cyclical changes in equipment expenditures have had a greater amplitude both in recession and recovery than has economic activity as a whole. In each of the three postwar swings, as can be seen in the chart, the decline in fixed investment has been relatively much greater than the decrease in gross national product which includes the cyclically-insensitive service expenditures, the partially offsetting Government outlays, and the less sensitive nondurable consumer goods.

Downturns in these aggregates have been generally close with producers' durable equipment expenditures lagging behind the recovery in overall output. In both 1954 and 1958 the trough in total GNP was reached two quarters before that in equipment outlays, and in 1948–50 the difference was one quarter.

Throughout the postwar period business expenditures for equipment have been maintained at a high rate along with the general expansion of the economy. After the initial surge to catch up with wartime-engendered deficiencies, producers' durables have averaged 5 to 6 percent of total economic output in current dollars; and the current ratio is about the same as in 1929. The ratio is slightly lower when expressed in constant dollars, although in this part of the economy where the long-term quality gains are an outstanding characteristic, the deflation process is especially beset with limitations. The investment in new equipment under conditions of rapidly advancing technology of the postwar period has resulted in cost amelioration and enlarged markets.

In the final months of 1959, expenditures for producers' durable equipment were at a seasonally adjusted annual rate of close to $28 billion, about one-fifth higher than the 1958 yearend rate. This rise has considerably outstripped that of construction in the business field. The increase in equipment purchasing from the first to the second quarter of 1959 was particularly marked—$2 billion at a seasonally adjusted annual rate—but the advance slowed down in the latter half of 1959 as supply restrictions on steel products delayed the amount of equipment put in place.

Capital goods recovery widespread

By purchasing industry, the recovery in capital goods spending has been fairly widespread. Except for the pub-

lic utilities all major groups increased their outlays during 1959. The gains were relatively largest in the transportation field, where the railroads and trucking firms have made a marked recovery from previous declines, while the airlines have been making record expenditures under long-range plane programs that were established considerably in advance of the latest cycle.

Most mining and manufacturing industries stepped up investment in durable equipment in 1959, though the petroleum industry—with especially large investment through most of the postwar period—has held its outlays steady since the first quarter of last year.

Character of machinery market

The cyclical fluctuations in investment demand have their direct counterpart in the ups and downs in machinery manufacturers sales (see chart). That manufacturers of investment goods have faced a market very much more volatile than that for producers catering to consumption stems largely from the nature of the products themselves: Their relatively high cost and long life influences business decisions and makes replacement and expansions subject to short-run evaluations as to the timing of capital commitments. Profit movements influence not only the basic decisions but also their timing.

Rarely is a machine replaced simply because it is physically spent, nor are new plants usually equipped with exact duplicates of existing facilities. Prime stimuli to producers' outlays have derived rather from advances in technology which have brought about new processes and made available more efficient, cost-reducing machinery through better control systems, faster operation, better materials handling, etc.

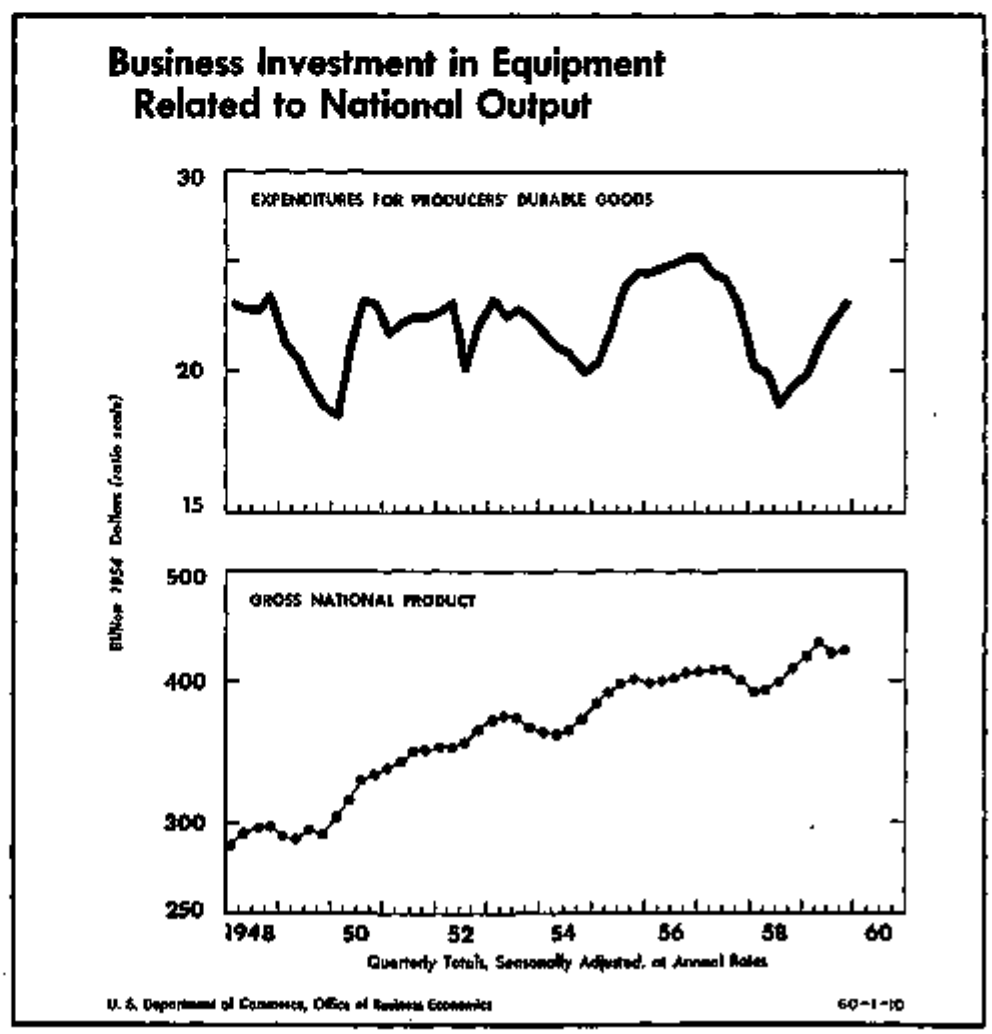
More importantly, from an aggregate point of view, there has been a broadening of the investment market deriving from the substantial growth in consumer demand for goods and services, from the development of new products, and from the growth of export markets. In addition to technological considerations, postwar investment has been bolstered by the favorable financial climate arising from the large volume of liquid assets, rising profits, accelerated depreciation, and the greater financial flexibility afforded by spreading sales-leaseback and direct rental programs.

Historically, technological advances have come to some extent in spurts and have tended to counteract some of the cyclical instability in the machinery industry. As competitors strive to take advantage of these innovations in equipment or in new processes a bulge develops in expenditures for producers' durables. When markets are more fully exploited, outlays for these particular machines of course taper.

In recent years among the fast-growing areas in producers' durable goods have been various types of electronic and automation equipment. Demand for specialized types of these installations to complete more quickly and efficiently tasks formerly performed by a considerably larger input of human resources—both physical and mental—cuts across a wide array of mining, industrial, and commercial activities. It has been a major factor in the plant and equipment expenditures of a variety of lines of business in recent years.

For more conventional types of industrial and business equipment, the postwar recessions—especially that of 1957–58—brought substantial retrenchment. To a large extent this may reflect the catching-up over a broad industrial front with the most pressing capacity requirements as a result of the unusually large volume of plant and equipment additions since 1940. This has been aggravated by a tendency for investment to "bunch up" during business revivals; the 1955–57 capital goods boom is a case in point.

Sales recovery has been relatively good except for producers of "machines to make machines," especially in the metal-working field; postwar cycles in machine tools have lasted for several years. It is possible that the newer processes of metal cutting and metal



forming such as through electrical and chemical reactions may provide new stimuli and smooth out some of the extreme movements in this field.

Structure of machinery industry

Manufacturing companies supplying the machinery market comprise an industry accounting for about 5 percent of total national income and a fifth of national income originating in manufacturing. Of more importance is the fact that the widely diversified products of the industry are at the heart of growth potentials of an industrial economy.

These products fall into two broad groups—electrical equipment and nonelectrical equipment. Output of electrical machinery companies covers all types of heavy equipment for use in the generation and transmission of electricity, communications equipment (including radios and television), household appliances, wire and cable, batteries and ignition systems, motors, lighting equipment, etc. Nonelectrical machinery companies also produce appliances and other consumer equipment, but more particularly cater to the equipment needs of manufacturing, agricultural, construction, mining, and trade enterprises.

Table 1.—Machinery Manufacturers' Unfilled Orders-Sales and Stock-Sales Ratios, 1956–59

	1956	1957	1958	1959	
	3d qtr.	3d qtr.	3d qtr.	3d qtr.	Nov.
	Unfilled Orders-Sales Ratios				
Machinery, total	4.8	4.4	4.2	4.3	4.3
Electrical	5.7	5.4	5.5	5.5	5.1
Nonelectrical	4.2	3.6	3.0	2.7	2.8
Industrial	3.3	2.8	3.1	3.0	3.1
	Stock-Sales Ratios				
Machinery, total	2.49	2.44	2.39	2.48	2.04
Electrical	2.23	2.14	2.10	1.62	1.80
Nonelectrical	2.58	2.50	2.61	2.20	2.17
Industrial	2.57	2.50	2.71	2.16	2.22

Source: U.S. Department of Commerce, Office of Business Economics.

Total sales for the electrical machinery producers in 1959 ran about $22 billion, and those of nonelectrical machinery about $10 billion more. Relative to 1929, growth has been about twice as great in the electrical machinery group as in the nonelectrical group, but in the postwar decade about the same in both areas.

Generally parallel movements in the value of shipments by the two major segments of the machinery industry have been characteristic of the last decade. This has been true in spite of the tremendous growth of certain more publicized products associated with the industry.

During the 1957–58 period machinery producers' sales were better sustained than might be indicated by equipment investment. Expenditures for producers durable goods declined more than 20 percent from the 1957 high to the low point in 1958. For the machinery companies, the decrease was about a sixth. Deliveries of machinery turned up a calendar quarter earlier than did investment. The latter, furthermore, as earlier stated is still somewhat under previous records in terms of current and constant dollars. Both electrical and nonelectrical machinery sales in late 1959, on the other hand, were well above previous highs in current dollars and slightly above in real terms.

Increasing prices and costs in the economy generally have their counterpart in machinery manufacturing. Prices of commodities produced by these industries rose more in the cyclical swings of 1955 onward than did prices of other durable goods. But here again we have the problem of measuring what is really the actual change in price.

While there are numerous instances of a high degree of concentration of productive facilities in the industry, a large proportion of total output is in the hands of medium- and small-sized companies. This is in part due to the custom specifications for many machinery products which do not lend themselves to assembly line techniques. As a result, the industry utilizes relatively high labor inputs.

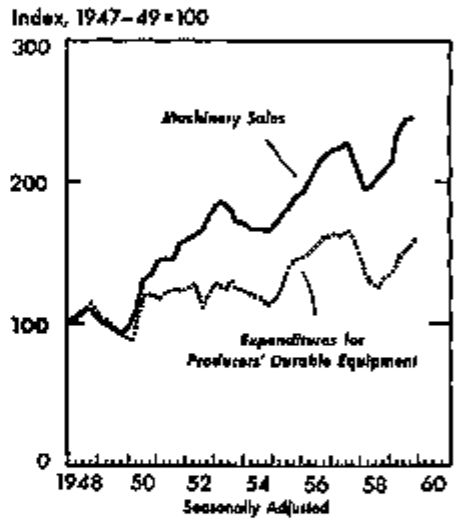
The electrical and nonelectrical segments of the industry have accounted for a rising proportion of total factory employment over the long term, though employment as well as demand has undergone sharp fluctuations during cyclical periods of change. In both the 1953–54 and 1957–58 periods the machinery industries accounted for more than a fifth of the decline in total employment; the indirect effects of declining investment were also significant.

Machinery orders and investment

A high proportion of machinery manufacturers' business is in goods manufactured to specification and requiring advance orders, rather than in the type of goods which can be procured from stock. A comparison of the various industries in this respect may be obtained by using the ratio of finished goods stocks to unfilled orders as a criterion: A low ratio is indicative of a large amount of goods produced only on order rather than for stock.

Machinery Companies' Sales . . .

Fluctuate with purchases of producers' equipment



In manufacturing, the lowest such ratio is in aircraft where finished goods are largely spare parts; at the opposite end of the scale are nondurable goods industries such as food where only a minor part of output is produced to specification. The machinery group has the lowest ratio, next to aircraft, of the durable goods group.

Equipment placed on order with machinery companies usually entails not only custom specifications but also long production periods, with the order preceding the final delivery and complete expenditure for the goods by many months. New business received by equipment manufacturers thus provides a leading indicator of probable

near-term trends in investment in producers' durables.

A precise measure of this lead cannot be established since new orders received by machinery manufacturers represent total commitments, including defense and consumer goods. In addition, the unfilled orders position of machinery producers will have a variable effect on the length of lead. The very high backlog of business equipment orders in 1956 was probably a factor in the longer lead of new orders over investment in 1957 than in the peak periods of 1948 and 1953.

In the postwar period, machinery new orders have reversed direction at least one calendar quarter ahead of the turn in expenditures for producers' durables. For example, incoming business for machinery began to decline in the third quarter of 1948 while investment continued to rise through the end of the year; the lead was also about two calendar quarters in the 1949 upturn. The onset of the 1953 decline in orders occurred one quarter prior to the reversal in capital outlays, but began to rise early in 1954 as expenditures continued to decline through the year.

Incoming new business for machinery manufacturers reached a peak in the fourth quarter of 1956—three quarters prior to the high in producers' durables and in total economic activity. The low in orders occurred in the first quarter of 1958 or two quarters prior to the low in outlays for equipment. The following recovery in new orders was swift and by the second quarter of 1959 new business had exceeded its previous high.

Despite some distortions due to the uncertainties in the supply of metals, ordering of machinery in the second half of 1959 has exhibited strength, suggesting further improvement in outlays for producers' durables in the near-term. A basic uptrend is also shown in the survey data on plant and equipment expenditures and a further rise is anticipated by business early next year. (December 1959 SURVEY, p. 3.) The improvement in demand for manufacturing equipment for the period ahead appears especially strong.

Table 2.—Machinery Manufacturers' Sales, Orders, and Inventories, 1957–59

[Seasonally adjusted—Billions of dollars]

	1957	1958		1959		Percentage change 4th qtr. 1958 to 4th qtr. 1959
	3d qtr.	1st qtr.	4th qtr.	2d qtr.	4th qtr.[3]	
Producers' durable equipment expenditures[2]	29.0	25.8	25.2	27.0	27.5	19
Sales[1]						
Machinery, total	52.2	45.0	47.7	50.4	50.5	18
Electrical	21.9	18.0	20.7	22.0	23.8	13
Nonelectrical	30.3	26.0	27.0	28.5	28.2	23
Industrial	13.1	10.1	9.7	13.1	13.0	34
New orders[1]						
Machinery, total	48.0	41.6	48.2	52.3	53.6	22
Electrical	20.0	18.1	21.9	24.1	24.0	10
Nonelectrical	28.0	22.5	26.3	34.2	34.6	32
Industrial	11.6	8.2	8.9	13.3	14.8	47
Unfilled orders[2]						
Machinery, total	18.9	16.3	16.0	18.0	17.9	11
Electrical	9.9	9.1	9.4	10.4	10.1	7
Nonelectrical	9.1	7.2	6.6	7.6	7.7	17
Industrial	4.2	3.0	2.6	3.2	3.4	31
Inventories[2]						
Machinery, total	10.7	9.9	9.9	9.7	9.7	9
Electrical	4.0	3.7	3.3	3.6	3.7	12
Nonelectrical	6.7	6.2	6.6	6.1	6.0	7
Industrial	2.7	2.5	2.2	2.3	2.3	5

1. Annual rates.
2. As of end of quarter.
3. Based on incomplete data.

Source: U.S. Department of Commerce, Office of Business Economics.

Backlogs lag in recovery

With rising investment, and with consumer purchasing of appliances at a record, the current inflow of orders is being closely matched by deliveries. Consequently, unfilled orders have grown only moderately since midyear. Backlogs at the end of November on machinery producers' books totaled $18 billion, up $2 billion since the low at the end of 1958 but as indicated in the chart still down a similar amount from the peak at the end of 1956.

The continued drop in backlogs for several months after both new orders and sales have turned up is characteristic not only of machinery but of the durable goods industries generally. While new orders turn up before sales, the volume at that time is well below even the depressed amount of sales, and months of catching up is required. Also, at this stage of the cycle there is considerable unused capacity and orders for goods with short production lead times can be quickly met. As the outlines of the upturn become clearer, businessmen then move to commit themselves to larger and more complex investment projects.

Backlogs of electrical machinery producers have shorter cyclical duration and a greater vigor in recovery than those of the nonelectrical group. End-of-November unfilled orders for electrical equipment at $10 billion were about equal to the previous peak in 1957, while nonelectrical machinery backlogs had not fully recovered.

Machinery companies' backlogs have not been keeping pace with the recently growing rate of deliveries in either major group. Unfilled orders-sales ratios for the machinery industry as a whole are now at 3.8 compared with 4.8 in late 1956. Declines in the ratio for electrical machinery have been moderate in recent months. In contrast, unfilled orders-sales ratios in the nonelectrical machinery group have tended downward and have been subject to the wide fluctuations depicted in the chart.

Declines in backlog-sales ratios reflect not only sales and new orders, but the result of shortened delivery times. This has been indicated by recent surveys which reveal rather substantial declines in the delivery time required for a large number of machinery items. As automation and new processes become more pervasive in the machinery industries themselves, further shortening of required production periods may be expected.

Inventories of machinery firms

The wide fluctuations in demand for fixed investment result in a history of substantial accumulations and even larger liquidations for the machinery industry. These changes in inventory investment have been disproportionately

large and thus contributed further to the variations in total investment within the economy.

Machinery companies hold some 10 percent of the book value of all nonagricultural stocks (20 percent of factory inventories). In each of the first two postwar recession years, machinery firms were responsible for more than a fifth of total business inventory declines: In 1957–58, one-fourth of the inventory reduction occurred in the machinery industries. Since the upturn in early 1959 they have also accounted for about this proportion of the rise in stocks. In the earlier inventory upswings, these firms' accumulations were proportionately about in line with the total variation.

Turning points in inventory book values of machinery producers have been either coincidental or lagging when compared with those for all manufacturing. The upturns in nonelectrical machinery have more generally been behind—possibly a reflection of the lag in investment when compared with total activity during recoveries.

For both electrical and nonelectrical companies there appears to have been a lowering in recent years in stock requirements per dollar of sales. Comparing the years 1954 and 1958, the stock-sales ratio for all manufacturing industries combined was higher in the latter period; but lower in both machinery areas. The shift was most discernible in the radio-communications-electronics component of electrical machinery and in nonindustrial machinery.

Inventory and sales movements last year have served to reduce the size differential of inventory-sales ratios in the electrical and the nonelectrical segments; the recent ratios stood at 1.9 for the former and 2.2 for the latter industry as compared to 2 and 2⅓, respectively, at the start of 1959. These current ratios are about as low as at any time in the postwar period—perhaps artificially low due to the combination of the current position in the investment cycle and temporary shortages of primary metals.

Reduction in the inventory-sales ratios recently has centered largely in purchased materials, a reflection of the steel-strike situation. There is some indication, however, that in recent years machinery manufacturers have tended to lower their purchased materials and to increase stocks of finished goods relative to sales. This may reflect on one hand a generally easier relative supply situation and on the other a tendency for retailers to shift the carrying of stocks of appliances back to the manufacturer.

Major Machinery Markets

THE WIDE divergence in the experiences of suppliers of various capital goods markets in recent years is indicated in the accompanying chart. Variations in the sales and new orders movements of the six subgroups reflect for the most part industrial differences in investment demand, although developments arising from other demands are significant in some products.

That the demand for electronic products and for office and store equipment has reflected strong growth and little cyclical swing in 1957–58 is evident in suppliers' sales. The rather steady growth in investment by the electric power companies is reflected in the mild cyclical sensitivity in the sales of the electric generating apparatus industry. In others, the cyclical impact is quite evident. This is especially true for producers of special and general industry machinery and metalworking equipment, given the sharp ups and downs in manufacturing investment. Special industry companies are now experiencing a record rate of sales and new orders.

In contrast, machine tool and other metalworking machinery producers' sales have shown considerably less than full recovery in recent months, although their rising new orders trend holds promise of near-term improvement.

Industrial machinery

Producers of special industry machinery—including equipment for the food processing, textile, paper, printing, and woodworking industries—undergo clear cyclical swings. This industry is about the most volatile of all the machinery industries, reflecting not only the wide fluctuations in manufacturing investment but also the highly specialized nature of its products.

As a further result of this specialization, only a small proportion of sales is made from stock, so that new orders have a distinct lead over sales—the data suggest about 9 months. New orders placed with the industry recently have been more than four-fifths higher than at the low point in early 1958, an upswing which has brought incoming business well above the previous high in early 1957. Information available on plant and equipment spending intentions indicate that much of the demand is originating with the food, textile, and rubber industries where investment programs are high in relation to past performance.

Shipments of special industrial machinery did not begin to recover from the 1957 contraction until late in 1958, lagging behind almost every manufacturing industry. Since then, they have reported by far the largest relative recovery. The achievement of record sales has resulted in rising new orders and backlogs. The latter are, however, still about a sixth under the record of 1956.

Turning to the general industrial machinery groups, recent sales and orders receipts record weaker recovery patterns than for any of the others. Deliveries of metalworking and other types of general industrial tools declined through all of 1958 with the upturn delayed until the beginning of 1959. Recent shipments are about a sixth below early 1957.

For manufacturers of metalworking and general industry machinery the all-time high in receipts of new orders occurred in the fourth quarter of 1955—

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a bunching attributable to the spurt in ordering of new dies by automobile manufacturers superimposed on top of the widespread rise in demand for other products of the industry.

Orders peaked again in early 1957—though 6 percent under the 1955 peak—and then fell by more than a third to a low in early 1958. Incoming business has shown a fair pickup this year but is still far below the previous high. Orders in this industry also show a clear lead over turns in sales—preceding reversals in sales by three or more quarters.

Orders were substantially smaller than deliveries from late 1956 through the fourth quarter of 1958. Backlogs, however, increased moderately during 1959. Data available for the machine tool portion of the industry portray the same pattern for both sales and orders—generally lower relative to business in 1956. In recent months new orders for machine tools have shown some expansion, largely because of a sizable inflow of orders from foreign buyers.

Generating and transmission equipment

The cyclical experiences of producers of equipment for the generation and transmission of electricity have been of moderate proportions. This has been due in large measure to the rather steady expansion programs of prime customers—the electric utilities. Plant and equipment expenditures of those service companies rose steadily from 1945 to mid-1958, except for a brief pause in 1954 and 1955. Turning points in electrical generating and transmission equipment sales have generally preceded those in investment expenditures by the utilities, probably a reflection of the continuing heavy costs incurred in installing such heavy equipment.

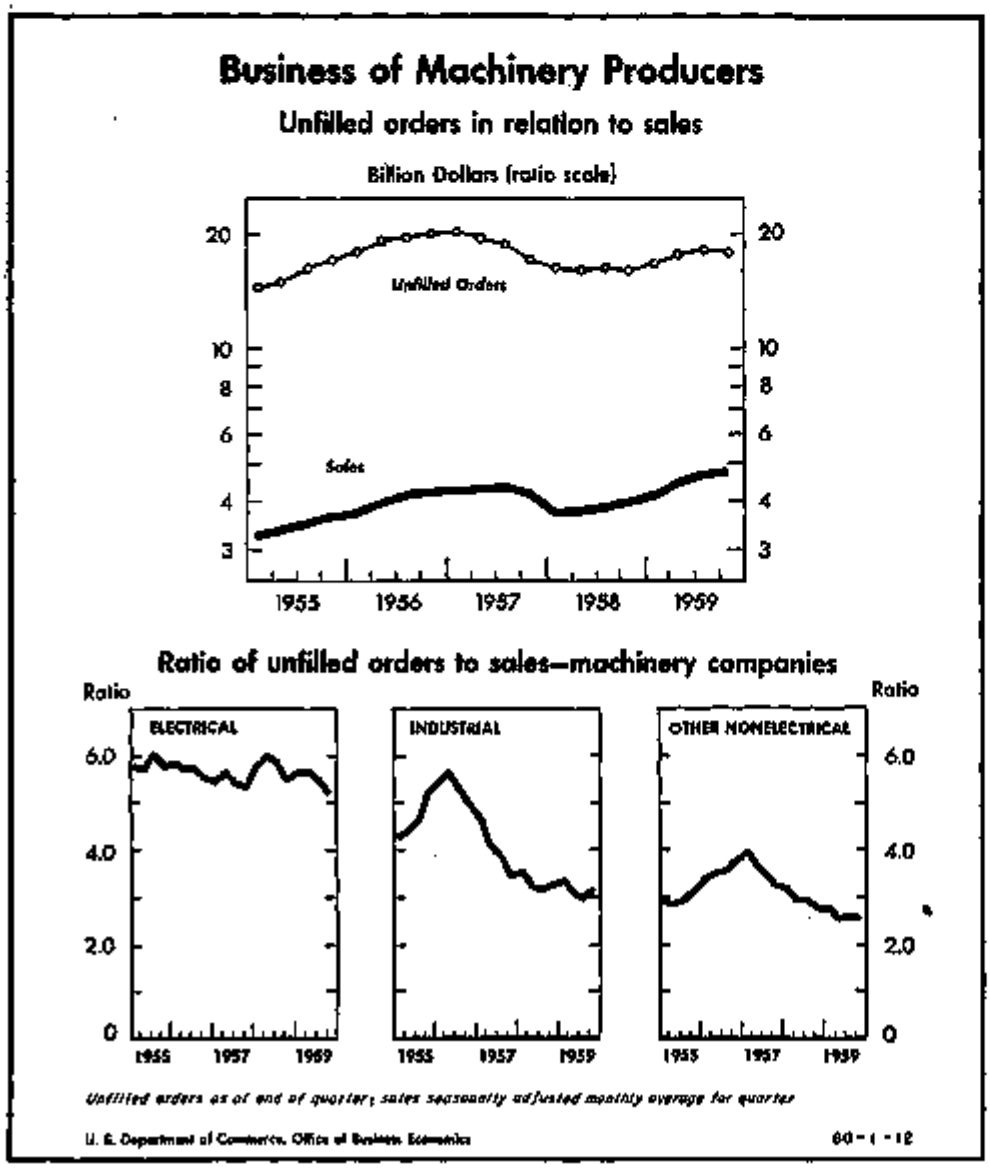
Sales of electrical generating and transmission equipment producers reacted only mildly to the 1957–58 downturn. Sales recovered rapidly and are currently well above the previous high, with the new expansion programs in generating capacity an important factor.

While new orders for the industry turned down early in 1956—about 6 months before the sales turn, they exceeded deliveries by a wide margin, with a consequent large buildup in backlogs. Since early 1957 incoming business has followed sales contours rather closely but at slightly lower levels. Current backlogs are about 15 percent under their earlier high.

Radio-communications-electronic equipment

The installation not only of labor-saving devices but of equipment capable of performing tasks beyond human capability within given limits of time has been given special impetus by postwar progress in electronic equipment. These fast-moving developments have coincided with an increasing flow of new products arising out of the rapidly rising expenditures for research. The results have been sizable advances in technology and a hastening of the obsolescence of existing business facilities. The fundamental changes in defense programs, with the emphasis shifting sharply away from manned aircraft toward ballistic missiles and space vehicles, also contribute importantly to activity in the electrical equipment industry.

It is little wonder then that manufacturers of radio-communications-electronic equipment have experienced a sharply rising trend in business since 1955, with only a pause during the 1957 contraction in general activity. Available data do not permit a separation of the company data on sales and new orders according to type of customer. However, external information indicates that the pause in activity which did occur in late 1957 and early 1958 probably stemmed more from de-



clining television demand than from defense or business programs.

New business placed with radio-communications-electronic equipment producers moved up in 1959 with an especially strong pickup in the third quarter. This occurred despite a temporary slowdown in the placement of defense contracts as the military programs underwent thorough review. Television demand on the other hand was strong with fall output at high rates. Finally, business demand was higher with rising investment programs placing relatively more emphasis on modernization and consequently on automation through electronic systems.

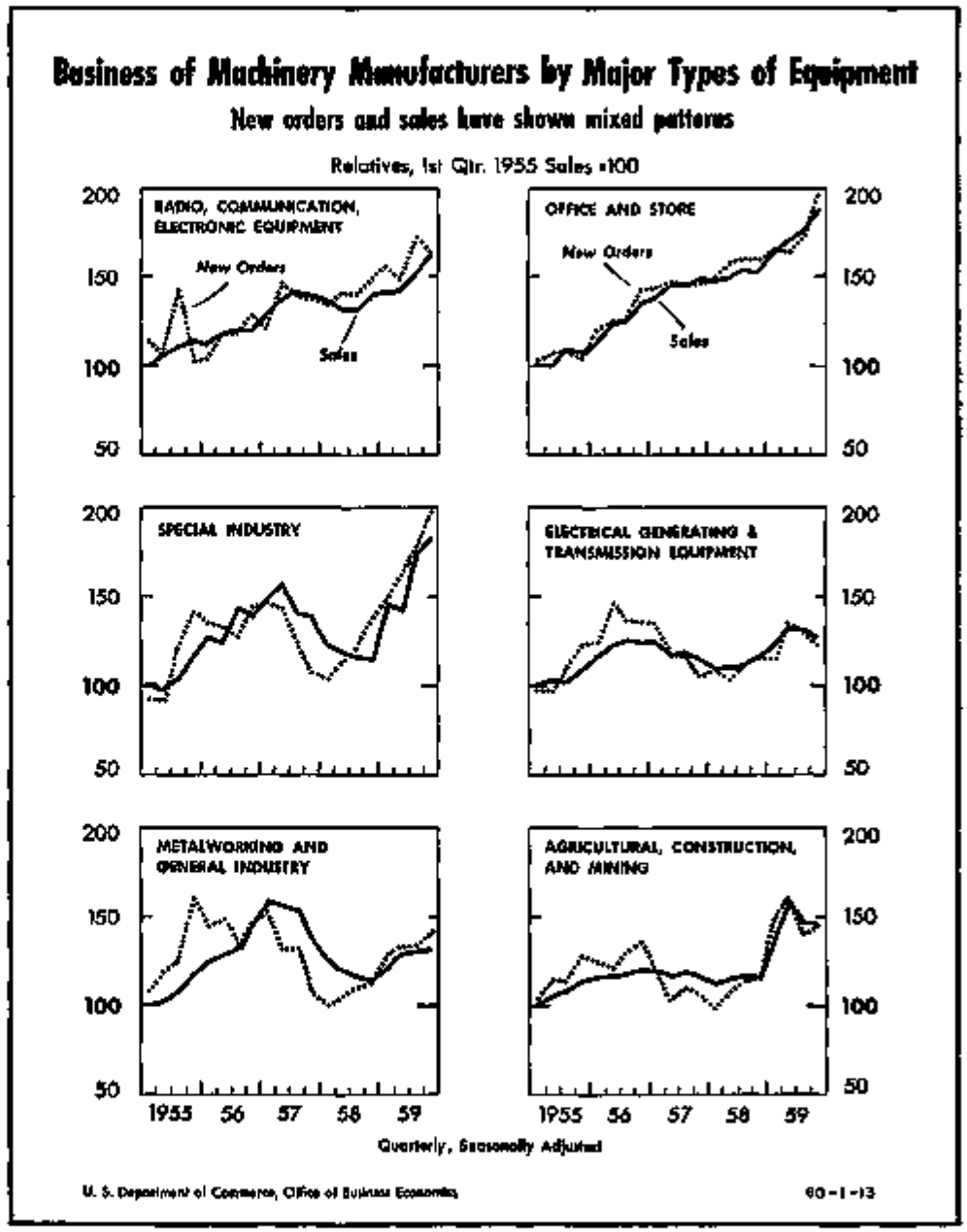
Orders received by this group of manufacturers have remained well above the value of deliveries since early 1958. The consequent growth in backlogs has been slightly greater than the rise in shipments—for one of the few instances in the machinery industries where unfilled orders-sales ratios did not decline during 1959.

Deliveries by the radio-communications-electronics group of companies have generally lagged the turn in new orders by a calendar quarter or more. Sales, after hesitating during the first quarter of 1959, rose substantially in the second and third quarters. Shipments continued in good volume early in the fourth quarter—apparently not having been seriously affected by steel shortages.

Office and store machinery

Among nonelectrical machinery producers there are two major groups; those manufacturing machines designed for the production of other machines or equipment and those producing equipment for the more direct output of goods or services. It is the latter group which recorded more market strength in recent years. The outstanding performance here has been by the office and store equipment industry.

Sales of the group have had an almost unbroken rise in the past 5 years, with the recent recession showing up only in a retardation in the rate of growth. In part this lack of cyclical sensitivity reflects the steady rapid growth in the development of computers and new types of bookkeeping, calculating, and record-keeping machinery. Also important has been the somewhat contracyclical nature of commercial investment during the fifties which has been in part a reflection of the lag in this area as compared with residential building.



The industry has benefited twice over from the changing population and buying habit patterns inherent in the move away from central city areas. First, there has been the extensive construction of new stores and offices in the expanding suburban areas. Secondly, downtown merchants have inaugurated intensive campaigns to construct new structures and refurbish old ones as well as to cut costs with new highly efficient machinery and automated processes. Another recent factor has been the central city boom in office construction with the resultant decisions to install new equipment.

The value of deliveries by manufacturers of store and office machinery has increased about a fourth over the past year. New orders received have been about in line with, or slightly below, the value of deliveries in 1959, following a continual excess in new orders throughout 1958.

Current backlogs of these producers are about as high as a year ago when they set a record.

Other machinery

A quite different pattern of sales is found for companies manufacturing agricultural equipment. Here, sales rose contracyclically in 1958, surpassing the former peak in 1952; farm operators net income in 1958 was also the highest since 1952. Farm income fell sharply in 1959—the third-quarter rate was at the lowest point in the postwar period. As a result, new orders and sales of agricultural machinery peaked in the spring, and declined sizably during the remainder of 1959. New orders placed with agricultural machinery companies have had sharp fluctuations but do not display any well-defined lead over sales—possibly due to the large proportion of sales which is of standard models and stock items.

Shipments of construction and mining machinery producers—benefiting especially from the road construction program and the record outlays for oil well drilling—established highs in 1956 and again in the first three quarters of 1957. Sales fell more than a third by mid-1958 and then recovered—although not back to their 1957 rates.

National Income Posts New Record in 1959

(*Continued from page 12*)

dustries, however. The effects of such shortages became progressively more severe until late in the fourth quarter, when production turned up in these industries as the supply position began to ease. This sequence of events may be traced in the chart on page 11, in which the course of wage payments reflects the shifting pattern of production from month to month.

Data on the quarter just ended are far from complete, and the period was one of rapid change. It is clear, however, that the second-half movements varied a great deal from industry to industry among the major metal-using lines.

Motor vehicles output in the third quarter—down during the changeover period—was substantially unaffected by materials shortages, and production of the 1960 models was high during most of October. Thereafter, assemblies tapered rapidly to a late November low. An upturn followed quickly, and by mid-December production was back around preshortage volume, allowing for some seasonal increase. Despite this comeback, auto output and income for the second half of 1959 were off by comparison with the first half of the year.

The effects of the steel strike on other user industries were much less marked, as far as can presently be judged. The machinery industries appear to have registered comparatively little change from the third quarter to the fourth, and were up overall from the first half. In fabricated metals manufacturing, however, activity and shipments tapered through November, and a similar pattern characterized nonautomotive transportation equipment. For these two lines, total production in the second half does not seem to have differed greatly from the rates attained earlier in the year.

Production of Electric Energy in 1958: Revised Data for Page S-26

[Millions of kilowatt-hours]

Month	Total	Electric utilities					Industrial establishments		
		Total	By source		By type of producer		Total	By source	
			By fuels	By water power	Privately and municipally owned utilities	Other producers (publicly owned)		By fuels	By water power
January	62,341	55,453	42,890	12,563	44,503	10,949	6,888	6,577	311
February	58,295	50,075	39,070	11,006	40,221	9,854	5,220	5,870	291
March	60,219	52,033	39,023	12,710	42,703	10,330	6,188	6,254	323
April	56,826	49,487	36,488	13,000	39,054	10,434	6,339	6,018	321
May	57,601	51,240	37,090	13,001	40,758	10,482	6,361	6,041	320
June	58,229	51,974	40,805	11,570	42,023	8,951	6,305	6,021	284
July	61,441	55,073	43,443	11,630	44,520	10,547	6,368	6,110	258
August	63,501	59,331	48,407	11,334	45,788	11,043	6,170	6,415	255
September	60,574	53,944	43,211	10,732	43,737	10,207	6,630	6,406	223
October	62,300	55,200	44,480	10,812	44,750	10,504	7,100	6,858	240
November	60,280	53,893	43,347	10,546	43,559	10,334	6,387	6,724	263
December	58,396	50,230	39,482	10,751	40,105	11,131	7,100	6,818	284
Monthly average	60,396	53,758	42,070	11,689	43,228	10,531	6,638	6,368	270

Source: Federal Power Commission.